

REMARKS

Claims 1 and 17 have been amended. Claims 2, 3, 15, 16, 18, 19, 27 and 28 has been canceled. Claims 4-14, and 20-26 remain in this application. Moreover, new claims 29-34 are added by this response.

Applicant has amended claims 1 and 17 by respectively merging original claims 3 and 19 thereinto, to more clearly identify a novel and non-obvious feature of the claimed invention, and all the elements of amended claims 1 and 17 are disclosed in Examples 1-7.

New claims 29-31, and 32-34 are dependent claims and depend respectively from amended Claims 1, and 17. All the elements of new claims 29-32 are disclosed in page 15, lines 1-8, and Examples 1-7.

Applicant respectfully request that a timely Notice of Allowance be issued in this case.

Response to Rejections Under 35 U.S.C. 102 & 103

In this Office Action mailed June 17, 2004, claims 1-3, 5-19, and 21-28 under 35 U.S.C. § 102(b) as being anticipated by Koitabashi (U.S. 6,387,168). As well, Claims 4 and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Koitabashi in view of Nakano (U.S. 6,676,736). Applicant respectfully traverses the rejections made by the Examiner for the reasons discussed below.

Response to amended claim 1

In the amended claim 1, claim 3 has been merged into claim 1 to further define that **the weight ratio of the carbon black pigment dispersions to macromolecular chromophores (MMCs) is between 1:2 and 2:1 as heretofore recited in claim 3.**

As recited in amended claim 1, the pigment-based black ink comprises at least one carbon black pigment dispersion and at least one macromolecular chromophore, and the weight ratio of the carbon black pigment dispersions to macromolecular

chromophores is between 1:2 and 2:1. It should be noted that the limitation concerning the weight ratio of the carbon black pigment dispersion to macromolecular chromophore is an optimal range for improving the optical density, waterfastness, smear-resistance, and bleed-resistance of a pigment-based black ink containing carbon black pigment dispersion and macromolecular chromophore (referring to page 15, lines 15-26, Table 1, and Examples 1-7 in the application).

Koitabashi discloses an ink comprising first and second pigments, wherein the first pigment is macromolecular chromophores and the second is carbon black pigment dispersions. Koitabashi also teaches that the weight ratio of the macromolecular chromophore to the carbon black pigment dispersion is within a range of from 5/95 to 97/3, more preferably 10/90 to 95/5, most preferably 4/6 to 9/1. Furthermore, Nakano teaches neither an ink comprising the macromolecular chromophores and the carbon black pigment dispersions nor the weight ratio therebetween.

Applicant submits that the weight ratio range from 4/6 (0.66) to 9/1 (9) is a very wide range. It is more than 5.56 times larger than the range of 1/2 (0.5) to 2/1 (2) as recited in claimed invention.

The following table makes the difference between the claimed weight ratio range and as taught by Koitabashi apparent:

	weight ratio of MMCs/ carbon black	weight ratio of MMCs/ carbon black
claimed invention	0.5	2
Claim 12 of Koitabashi	0.66	9

It is clear that Koitabashi teaches a much wider range. Due to the present invention, as recited in claim 1, in regulating the weight ratio therebetween at 0.5-2, the waterfastness, and bleed-resistance of the pigment-based black ink provided by thereby has been further improved. Applicant respectfully submits that the specific weight ratio range of the carbon black pigment dispersion to the macromolecular

chromophore in amended claim 1 can obtain unobvious or unexpected results over the Examiner's cited references, and the differences should not be considered obvious design choices.

The Examiner is also reminded that "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." MPEP 2144 citing *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

In view of above, the Examiner's cited references do not teach the specific weight ratio.

Additionally, Applicant notes that, according to the Koitabashi patent, Koitabashi regulates the weight ratio range by the measured OD value, and the determined strike through resistance and the roundness (see col. 21 and Table 2 of Koitabashi). In contrast, according to the present disclosure, the weight ratio range is regulated, not by the OD value and the smear resistance, but rather by determining the waterfastness, and bleed-resistance (referring to page, 12 lines 25-33, pages 13-14 and Table 1 in the application) and controlling the weight ratio of carbon black pigment dispersion to the macromolecular chromophore as set forth in claim 1. Accordingly, it is applicant's belief that one of ordinary skill in the art would not been motivated to prepare an ink composition, having the specific MMCs/carbon black pigment weigh ratio as recited in claim 1, with excellent waterfastness, and bleed-resistance, by making reference to Koitabashi's teachings.

As discussed above, the Examiner's cited references fail to disclose or render obvious the ink of amended claim 1. It is Applicant's belief that amended claim 1 is allowable over the Examiner's cited references. Claims 4-14, and 29-31 all depend either directly or indirectly from amended claim 1, and add features thereto which further define their scope. Thus, dependent claims 4-14, and 29-31 are also believed to be allowable as further defining the scope of an allowable independent claim.

Amended claim 17

Claim 17 recites an ink-jet printing method by employing the ink-jet ink as claimed in amended claim 1. Since amended claim 1 is patentable over the Examiner's cited references as discussed above, it is Applicant's belief that the ink-jet printing method employing the ink-jet ink composition as claimed in amended claim 1 is also allowable. Insofar as claims 20-26 and 32-34 depend from claim 17, it is Applicant's belief that these claims are also allowable.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 12-0415. In particular, if this response is not timely filed, then the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136 (a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 12-0415.

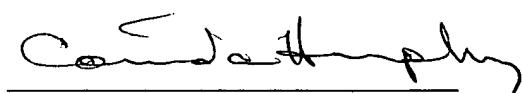
I hereby certify that this correspondence is being deposited with the United States Post Office with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents PO Box 1450, Alexandria, VA 22313-1450 on

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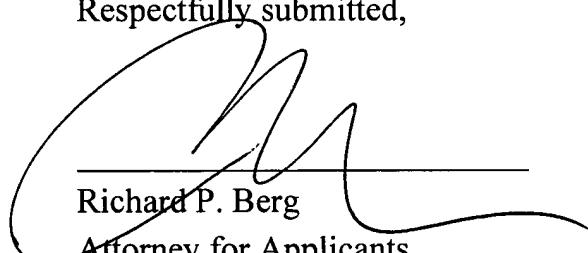


(Signature)

November 15, 2004

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Respectfully submitted,



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